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PATTERNS OF DURATION OF
EMPLOYMENT AND UNEMPLOYMENT

Technical Study 12
**PATTERNS OF DURATION OF
EMPLOYMENT AND UNEMPLOYMENT**

Graham Glenday and
Glenn P. Jenkins

July 1981

This study was conducted by the Department of Employment and Immigration, Canada. It is based on data from the National Household Survey of Canada, 1976.

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This is one in a series of technical studies prepared for the Task Force on Labour Market Development. The opinions expressed are those of the author and do not necessarily reflect those of the Task Force. They do not reflect the views of the Government of Canada.





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This study examines the durations of unemployment and employment for the population aged 15 and over.

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July 1981

This study has analysed sufficiently long time series to allow these analyses to be made with increased rather than decreased detection of employment/unemployment spells for the first time in Canada.

Unemployment in this study is defined as the period of non-employment between two spells of employment, regardless of whether or not the individual actively sought work during this period. The duration of unemployment in this study will be referred to as the duration of non-employment. The definition we have used for the average duration of unemployment is based on the average duration for adults who had 3 weeks. As the average duration of employment for those experiencing unemployment was 36.3 weeks,

The striking feature of the patterns of unemployment and employment in the data from the household survey is that they show considerable fluctuations in both the mean and the variance.

This is one in a series of technical studies prepared for the Task Force on Labour Market Development. The opinions expressed are those of the author and do not necessarily reflect those of the Task Force. They do not reflect the views of the Government of Canada.



ABSTRACT

PATTERNS OF DURATION OF UNEMPLOYMENT AND EMPLOYMENT

Graham Glenday and Glenn P. Jenkins

This study examines the durations of unemployment and employment for those in Canada who experienced some unemployment between 1972 and 1979. This analysis was carried out using the UIC-ROE data base developed from the administrative records of the Unemployment Insurance Commission. This data base covers a time period sufficiently long to allow these analyses to be made with observed rather than estimated durations of employment/unemployment spells for the first time in Canada.

Unemployment in this study is defined as the whole of the period of non-employment between two spells of employment, regardless of whether or not the person was actively seeking work during this period. Hence, the duration of unemployment in this study could instead be referred to as the duration of non-employment. Using this definition we found that the average duration of unemployment for 1972-79 was 11.7 weeks. At the same time the average duration of employment for those experiencing some unemployment was 38.3 weeks.

The striking feature of the patterns of unemployment and employment is the high degree of skewness found in these distributions. Although the mean duration of unemployment is 11.7 weeks the median is only 4 weeks. Similarly, for employment spells the median is 18 weeks, or about 50 per cent of the mean.

It is important to know whether the underlying distribution of the durations of unemployment spells for an individual is highly skewed to the right as is the distribution across individuals. Knowledge of this distribution is critical in predicting the lengths of spells suffered by an individual as well as in knowing whether any one spell of unemployment is typical of the unemployment experience of that individual. One approach is to investigate the distribution of the unemployment spells for groups of individuals who experienced similar durations of unemployment per spell on average over a period of at least six years in the labour force. The distributions of the spells within these groups displayed similar skewness to that across individuals. For example, for those who had average durations of unemployment of 24 weeks, the median duration of a spell was considerably lower, about 8 weeks.

Another approach taken is to test the hypothesis, "that if an individual experiences a long duration of unemployment then he will always tend to have a long duration of unemployment." We compared all the unemployment spells with long durations in the sample with the duration of the next unemployment spell experienced by the same individuals. We defined a long duration of unemployment as being greater than 26 weeks and found that the average duration of all spells of unemployment fitting this criteria was 42.5 weeks. The next spell of unemployment experienced by these same individuals, however, had an average duration of 19.3 weeks, less than half the length of their previous spell. Furthermore, it is found that among those with at least two completed unemployment spells only a low, although statistically significant, correlation of .13 exists between the lengths of successive unemployment spells. In contrast, the correlation between successive completed employment spells is considerably higher at .34.

The study also found that women tend to have longer durations of both employment and unemployment compared with men. Hence, they tend to have lower rates of turnover than men. Overall, we find that across individuals the average duration of employment tends to be positively related to the average duration of unemployment. In addition, the duration of the employment spell is positively related to the length of time the individual has been in the labour force, but it is negatively related to the seasonality of the industry in which the individual is employed.

The principal policy implication of this study is that the chronically unemployed, in general, cannot be identified as those individuals who at some point in time experience a long duration of unemployment. Hence, programs that target on such individuals will not alleviate long spells of unemployment in the future because they will most likely be experienced by other people.

In addition, we find that the duration of employment plays as important a role in determining an individual's overall unemployment/employment experience as does the duration of unemployment. Hence, the nature of the jobs available and the incentives of employers to retain employees are important variables in controlling the amount of unemployment experienced by workers.

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SOMMAIRE

TENDANCE DE LA DURÉE DES PÉRIODES DE CHÔMAGE ET D'EMPLOI

Graham Glenday et Glenn P. Jenkins

L'étude examine la durée des périodes de chômage et d'emploi des Canadiens qui ont connu le chômage entre 1972 et 1979. Cette analyse a été rendu possible grâce à la base de données des relevés d'emploi et de l'assurance-chômage établie à partir des dossiers administratifs de la Commission de l'assurance-chômage. Cette base de données couvre une période suffisamment longue pour que des analyses, pour la première fois au Canada, portent sur des durées observées et non estimatives des périodes de chômage et d'emploi.

Dans le cadre de l'étude, on définit le chômage comme étant la totalité de la période de non-emploi comprise entre 2 périodes d'emploi, que la personne ait ou non cherché un emploi au cours de cette période. Ainsi, la durée de la période de chômage pourrait en réalité être considérée comme étant la durée de la période de non-emploi. Au moyen de cette définition, nous avons constaté que la durée moyenne de chômage pour les années 1972 à 1979 s'établissait à 11,7 semaines. Simultanément, la durée moyenne de la période d'emploi pour les personnes qui avaient connu le chômage correspondait à 38,3 semaines.

L'élément caractéristique des tendances du chômage et de l'emploi est le degré élevé d'asymétrie que l'on observe dans la répartition de ces statistiques. En effet, même si la durée moyenne du chômage s'établit à 11,7 semaines, la

durée médiane quant à elle n'est que de 4 semaines. De la même manière, la médiane pour les périodes d'emploi est de 18 semaines, ce qui représente environ 50% de la durée moyenne.

Il est important de savoir si la répartition sous-jacente des durées des périodes de chômage pour une personne est axée vers la droite, de la même façon que la répartition entre tous les chômeurs. Il est très important de connaître cette répartition si l'on veut déterminer la durée des périodes de chômage pour une personne et savoir si une période particulière de chômage est typique du vécu du chômage de cette personne. On peut notamment examiner la répartition des périodes de chômage pour des groupes dont la durée du chômage, par période, est en moyenne semblable sur une période de temps donné d'au moins 6 ans d'activité. La répartition de ces périodes au sein de ces groupes a montré la même asymétrie que dans le cas des chômeurs individuels. Par exemple, pour les groupes qui avaient connu en moyenne des périodes de chômage dont la durée s'établissait à 24 semaines, la durée médiane d'une période était beaucoup plus faible, soit d'environ 8 semaines.

Une autre optique consiste à vérifier l'hypothèse suivant laquelle "si un chômeur connaît une longue période de chômage, il aura toujours tendance par la suite à connaître un chômage de longue durée". Nous avons comparé toutes les périodes de chômage de longue durée, pour la période visée par l'échantillon, avec la durée de la période subséquente de chômage. Nous avons aussi défini une période de chômage de longue durée comme étant supérieure à 26 semaines et constaté que la durée moyenne de toutes les périodes de chômage répondant à ces critères s'établissait

à 42,5 semaines. La première période de chômage subséquente, pour ces mêmes chômeurs, s'établissait en moyenne à 19,3 semaines, soit moins de la moitié de la précédente. De plus, on a constaté que pour les chômeurs qui avaient au moins 2 périodes de chômage complètes, il existait une corrélation faible, bien que statistiquement significative, de 0,13 entre la durée des périodes successives de chômage. En revanche, la corrélation entre les périodes d'emploi complètes successives est beaucoup plus élevée et atteint 0,34.

Cette étude révèle également que les femmes ont tendance à connaître des périodes de chômage et d'emploi plus longues que celles des hommes, de sorte que leur taux de roulement tend à être plus faible. Dans l'ensemble, nous constatons que pour tous les chômeurs, la durée moyenne de l'emploi tend à être reliée positivement à la durée moyenne du chômage. En outre, la durée de la période d'emploi est reliée positivement à la durée de l'activité, mais est reliée négativement à la saisonnalité du secteur d'activité dans lequel le travailleur est employé.

La principale incidence de cette étude sur l'élaboration de politiques est que les chômeurs chroniques, en général, ne peuvent être définis comme étant ceux qui, à un moment donné, connaissent un chômage de longue durée. Ainsi, les programmes qui sont axés sur ces personnes n'allègeront pas à l'avenir le problème du chômage de longue durée parce qu'il sera vraisemblablement vécu par d'autres personnes.

Qui plus est, nous constatons que la durée de la période d'emploi joue un rôle aussi important que la durée de la période de chômage dans la définition du vécu global

de l'emploi et du chômage d'une personne. C'est ainsi que la nature des emplois disponibles et les stimulants offerts par les employeurs aux employés pour les garder à leur service sont des variables importantes qui contrôlent la durée du chômage vécu par le travailleur.

Patterns of Duration of Unemployment and Employment

I. Introduction

The question of the relative importance of the rate of job turnover versus the duration of unemployment spells in determination of the overall amount of unemployment experiences by the labor force has been the focus of considerable research effort over the last decade.¹ Contrary to the view that unemployment is a state in which people remain for long periods during cyclical downturns, this research has emphasized the fact that unemployment is a flow process where many people become separated from their place of work each period and are generally unemployed for a relatively short period of time. Recently Clarke and Summers (1979) in a review of the U.S. experience have argued that while most unemployment spells are of short duration, a large proportion of unemployed time is experienced by a relatively small number of people who experience very long durations of unemployment.

To date, most of the analysis of labor market behavior has been carried out using either monthly observations of the stock of unemployed individuals at a point in time or data tracking the unemployment-employment experience of individuals over one or two years.² In Canada several studies (Beach and Kaliski, 1981; Hasan and de Boucher, 1981; McIlveen & Sims, 1978; Postner, 1980) have examined the labor market behavior of individuals over a period of a year using the annual work patterns survey carried out by Statistics Canada.

To use observations of individual behavior over a period of time shorter than the individual's unemployment-employment cycle causes one to have to resolve two problems. First, many of the longer spells of both unemployment and employment are truncated by the boundaries of the observation period. Hence, one has to estimate the duration of unemployment spells from the partially observed relationship between the probability of obtaining employment and the duration of unemployment. This problem alone can be credited with creating a field of research (Beach and Kalisk, 1980; Clark and Summers, 1979 and 1980; Cripps and Tarling, 1974; Hasan and de Boucher, 1981; Frank, 1978; Lancaster, 1979, Lazar, 1978, Kaitz, 1970; Nickell, 1979; Perry, 1972; and Salant 1977). Second, the observation that a person has a short or long duration of unemployment at a particular point in time does not enable us to determine whether the type of spell the person is experiencing is a characteristic of the individual, hence, if it is likely to be repeated, or if it is caused by other market forces, or if it can be viewed as a random event.

This latter problem is important for the design of policies to counteract unemployment. If people who experience long durations of unemployment tend to repeat their past performance, then a large amount of unemployment would be eliminated by a successful policy that was concentrated on these individuals. The target group would be quite easy to define if one could use the length of previous durations of unemployment as the principal criterion for identifying

participants of the program. However, if it turns out that long durations of unemployment are unlikely to be repeated by the same individual, then programs focused on those with a previous long spell of unemployment would be largely a wasted effort.

A related problem in the measurement of the duration of unemployment arises out of the difficulty of determining whether a person is unemployed or out of the labor force when they are not employed. Aside from the specific reasons that cause people to remove themselves from the labor force (sickness, schooling, retirement, pregnancy, becoming a houseperson) the labor market statisticians have had to rely heavily on questions related to the individual's job search behavior. However, from either the point of view of private income or economic welfare, the loss that occurs when a person is not employed is not significantly altered whether or not the individual has been recently searching for work. Some careful work has been done (Beach and Kaliski, 1981), to determine the effect of the Canadian Labor Force Survey criterion that designates people either unemployed or out of the labor force based on questions concerning job search. Others such as Clark and Summers (1979) have argued that the period of non-employment is a better measure of the duration of unemployment than is the conventional definition used by labor force statisticians.

According to the conventional definition of the duration of a spell of unemployment it is the length of any unemployed time

bounded by either employment or time spent out of the labor force. This definition naturally leads to shorter spells than one based on the total unemployed time between jobs when analyzing the lengths of unemployment spells following a job separation. The conventional definition also leads to high turnover rate (or the number of entries into unemployment per time in the labor force) estimates. This higher turnover or shorter duration effect is particularly evident where persons move in and out of the labor force frequently during the period between jobs as is expected to the case for many non-primary income earners. This definitional problem will be evident during the course of this paper in making comparisons with other studies.

A related problem is the degree of accuracy used in recognizing and classifying a period of unemployment. When longer minimum time periods are used in surveys before unemployment is recognized the turnover rates will be biased downward and the average duration of unemployment estimated will also tend to be biased upward as the unemployment spells that are shorter than the minimum length required by the survey (a week, a month, etc.) are not recognized.

To carry out the investigations of the nature of the duration of unemployment and employment in Canada reported in this paper we have developed a data base that largely overcomes the first two problems outlined above. By combining the administrative records for insurance claims on the Canadian Unemployment Insurance Commission (UIC) with the records of employment for these individuals (submitted to the UIC by firms) along with some income tax information (from T-4 forms) we are able to construct a weekly profile of the labor force experience of a 10 percent sample of all individuals who have been unemployed and claimed UIC benefits at least once since 1972. The weekly profile of employment status (i.e. employed, unemployed, whether or not claiming UIC benefits or out of the labor force) extends for each individual in the sample from January 1972 to December 1979.³

Because this information is based on administrative records and not interviews we do not have detailed information on each worker's job search behavior. While we can tell whether or not a person is employed and/or is collecting UIC benefits, we can not determine if the worker is actively searching for a job. From the UIC records we do know if the person is out of the labor force based on reasons that will change his UIC claim status and/or separation reasons on his record of employment. For example, if a person has returned to school, is retired, sick, pregnant or has moved out of the country, the UIC records would classify the person as being out

of the labor force. In addition, when we found that a person had quit a job and did not find another job for an extended period or collect UIC benefits then we also classify this person as being out of the labor force. The classification of being out of the labor force in the UIC-ROE data file is based more on indicators of availability for work than intensity of search behavior. A person who is available but not looking for work will tend to be included in the labor force in this data set.⁴

Given this definition of being out of the labor force the durations of unemployment estimated from the UIC-ROE data files are quite close to what Clark and Summers (1979, 34) classify as the duration of non-employment. On the other hand, the UIC-ROE data file is more accurate than the Canadian Labor Force Survey at identifying short periods of unemployment or job switching because it determines a person's weekly status while the Statistics Canada Labor Force Survey information determines status on a monthly basis. The latter would only classify a person as being unemployed if he were unemployed at least an entire calendar month (Beach and Kaliski, 1981, 7).

Because the UIC-ROE data files enable us to construct an 8 year force history for a sample of the unemployed who have been in the labor force at least 8 years and for the period since the individuals got their first job for those in the labor force less than 8 years, the problem of truncated unemployment and employment spells is very much decreased. Although the reported data in this paper does not

cover any spell of unemployment or employment started after January 1980 the information for 1980 was used to complete the information in spells started prior to the end of 1979.

The information used in this study represents a 1/1000 sample of all individuals who experienced job-separation at least once since 1974 and who have collected UIC benefits at least once since 1972 in Canada. This provides us with a sample size of 6344 individuals that have in total experienced 24,152 separations from employment during 1974-79. While detailed information was not generated for the weekly unemployment-employment experience of workers over the 1972-73 period, information concerning the number of unemployment spells and average duration for each spell during this period was available.

II. Duration of Unemployment by Age and Sex

The relative severity of the unemployment experience according to sex of the individual is an important issue of public policy and has been used as an argument both for and against affirmative action programs for women workers. Research to date has concentrated on their relative frequency and duration of unemployment with less emphasis on the comparison of their relative employment experience. The analysis by Beach and Kaliski (1981, 18) and Hasan and deBroucher (1981, 13) using the Annual Work Patterns Survey (AWPS) and the Labor Force Survey (LFS) indicate that women tend to experience shorter durations of unemployment than men.

However, while the monthly LFS data seem to indicate that women become unemployed more frequently than men (Hasan and deBoucher (1981, 11)), the AWPS for 1978 seems to indicate that women are unemployed somewhat less frequently than men (Beach and Kaliski, 1981, p. 69-71).

This discrepancy follows from the fact that the monthly labor force survey tends to report a relatively greater frequency of women leaving the labor force during a spell of unemployment than is the case for the Annual Work Patterns Survey. Given that many women have a relatively higher opportunity cost of non-labor force time than men, it is not surprising that we observe them leaving the labor force more frequently during periods of unemployment. Furthermore, as the AWPS relies on recall of monthly activity during the previous year, it is likely that some periods when the women were not searching for work were not reported.

In Table 1 the estimates of the duration of unemployment are reported using two alternative criteria. First, in Columns 1 and 2 the average duration of unemployment spells are estimated for males and females where all spells are counted including spells of less than one week. In these cases, a worker left one job and began another in the same or in consecutive weeks. These average durations measure the average amount of time of workers (who have collected UIC at least once) have spent between jobs, but exclude the time these people are not available for work.⁵

Table 1

Average Duration of Employment by Age and Sex
 (1974 to 1979)

Age Group	All Spells Between Between Jobs		Unemployed Spells of at Least One Week in Duration	
	Men (1)	Women (2)	Men (3)	Women (4)
24	12.9	13.2	18.6	20.0*
25 to 34	11.0	12.5*	16.5	19.6*
35 to 44	10.4	12.3*	15.1	17.2*
45 to 54	10.9	14.8*	15.1	19.2*
55 and above	12.0	14.0*	15.9	19.0*
Average	12.0		17.6	
Number of Observations	12750	6047	8812	4114

* For the age groups the mean duration for men and women are significantly different from each other at the 99 percent level of confidence.

The average duration of unemployment for men and women combined is 12.0 weeks. However, we find that for all age groups women spend a longer period of time between jobs than do men. Because the UIC-ROE data files do not count people as being out of the labor force if they are still collecting UIC benefits, (even

if they are not looking for work) the durations are somewhat longer than those estimated by either the monthly labor force survey or the annual work patterns survey. The difference between the duration of unemployment for men and women is also wider for age groups above 25 years and is largest for the 45 to 55 age group. This result is expected given that women tend to be somewhat less mobile and in the age groups above 25 will generally have a higher opportunity value for their household time than men.

When we only include in our calculations of duration of unemployment the spells between jobs that last a week or more we find that the overall average duration of a spell increases to 17.6 weeks. This is approximately 80 percent longer than previous estimates made from the gross flow data from the LFS (Hasan and deBoucher, 1981, 11) and 40 percent longer than estimates made from the AWPS (Beach and Kaliski, 1981, 18). Again we find that the duration of unemployment of women in all age groups is significantly longer than that experienced by men. From the youngest age groups through to age 55 the duration of unemployment of men tends to decline from an average of 18.6 weeks to 15.1 weeks. For men older than 55 the duration increases slightly to 15.9 weeks. Women also experience a decline in the average duration of unemployment from 20 weeks for those less than 25 years to 17.2 weeks for those 35 to 44 years old. However, above 45 years old the duration of unemployment increases to an average of approximately 19 weeks per spell at ages above 55.

The substantially longer average duration of unemployment experienced by these individuals when we exclude separations from jobs that resulted in immediate employment elsewhere raises the question as to which measure provides the most information on the nature of the labor market conditions facing these groups. Separations from jobs that result in unemployment of less than a week (if any) account for over 31 percent of all separations of those who have collected UIC benefits at some point over the 8 year period. This proportion is virtually the same for both men and women. However, men and women less than 35 years old tend to have a slightly higher proportion of job separations that do not result in unemployment (33 versus 29 percent for men). In this analysis separations that result in people immediately leaving the labor force (because of such reasons as sickness, retirement, or returning to school) are not included in the total number of separations considered. As a result the comparison of the number of separations that are, and are not, followed by unemployment before the person obtains another job deal with people whose objectives are similar (they are ultimately looking for another job). However, the fact that over 30 percent of all separations of these people who have experienced unemployment in Canada have resulted in immediate employment leads one to question why it is that these people sometimes experience significant or recognizable durations of unemployment while at other times they obtain work immediately.

A piece of information that may assist in explaining why some job separations lead to unemployment while others do not is the reason for separation given by the company on the ROE form it submits when an employee leaves the firm. Table 2 contains a comparison of the separation reasons given by the employers prior to spells of zero duration with those given prior to when workers become unemployed for periods of more than 1 week.

Table 2

Reason Given By Employer For Job
Separation of Worker

Reason	Separations where worker subsequently unemployed for more than one week.	Separations where worker finds subsequent employment immediately.
(as percentage of total separations in category)		
Laid Off	62.0	30.7
Labor Dispute	1.0	0.6
Quits	16.7	49.7
Other	20.3	19.0
	<hr/>	<hr/>
	100.0	100.0

From Table 2 we can see that the pattern of the reasons for job separations are quite different for those who experience unemployment after job separation as compared to those who go

immediately to their next job. The principal difference in the patterns concerns the proportion of separations instigated by layoff versus quitting. For those who experience unemployment for more than a week, 62 percent are laid off and 16.7 percent quit while for those who go immediately to their next job 30.7 percent are laid off while 49.7 percent quit. There is approximately a 30 percentage point shift from layoff to quitting as we move from those who experience unemployment to those who do not after separating from a job.

This is to be expected as considerable job search activity normally takes place while people are working; hence, people quit one job when they find a better job to which to move. Those who are laid off either begin searching for another job only after layoff or have not been as successful at searching beforehand and, therefore, are unemployed for a time until they find another job. On the other hand, some people who expect to be recalled to their previous place of employment or have other competing non-market uses of their time will find it advantageous to remain unemployed for a period of time.

In reviewing the reasons for separation it is not so surprising that more people who get another job immediately after separation have quit their previous job. However, it is surprising that about 50 percent of the people who got another job immediately either had been laid off or had left their previous job for reasons other than quitting. Over 30 percent of these people were laid

off plus another 19 percent were terminated for reasons other than quitting or clear cases of layoff.⁶

Clark and Summers (1979, 19) have emphasized the point that in the unemployment in the U.S., tends to be experienced by a relatively small proportion of the labor force and that the long durations of unemployment account for the vast majority of the total amount of unemployed time observed. Their analysis was based primarily on data for unemployment spells obtained from a monthly survey with some longitudinal information on individuals for one year periods.

Results from a study for Canada (Glenday and Jenkins, 1981, 18) confirms the observations by Clark and Summers that the unemployed are a fairly restricted subset of the labor force. It was found that over an eight year period about half of the Canadian labor force experienced no spell of unemployment longer than one week. At the same time, a group of workers, representing about 36 percent of the labor force frequently became unemployed and contributed to approximately 84 percent of the unemployment spells and 88 percent of total unemployed time in any given year. However, the UIC-ROE data files enable us to carry the analysis further to consider both the distribution of unemployed time by duration of unemployment spell and the distribution of unemployed time by the average duration of unemployment experienced by individuals over longer periods. To investigate this contribution to unemployment by individuals over time the sample of persons

with at least six years in the labor force and two unemployment spells of one week or more was used.

Table 3, column 2 contains the percentage distribution of the length of spells between jobs experienced by the people in this sample. The zero duration spells are also included in the distribution as they represent spells where unemployment could have been experienced for a large number of those workers. Column 3 contains the percentage distribution of total unemployment time experienced by the Canadian labor force over this six year period according to duration of unemployment spell. In column 4 the cumulated values for the percentage of total spells are estimated according to their duration of unemployment. While column 4 reports these estimates including the spells of zero duration, these spells are excluded from the values reported in column 5. In column 6 the cumulative percentage of total unemployed time is reported according to duration of unemployment spells. Here we find that 65.8 percent of all the spells between jobs lasted less than 12 weeks. However, these spells only accounted for 14.6 percent of total unemployed time experienced during this period in Canada. If we exclude the zero duration spells then 52.3 percent of all unemployment spells were less than 12 weeks in duration and the gain represented the same 14.6 percent of the total amount of unemployed time. A total of 85.2 percent of all spells between jobs, or 75.6 percent of all spells between jobs that resulted in unemployment of a week or more had a duration of less

Table 3

Distributions of Duration of Unemployment Spells Following Job Separation and of Unemployed Time for Those in Labor Force 6 or More Years

(1)	(2)	(3)	(4)	(5)	(6)
			Cumulative Percentage		
Duration of Spell (Weeks)	Percentage of Total Spells	Percentage of Total Unemployed Time	Spells Inc.	Spells Excl. Zero	Unemployed Time
0	28.3	0	28.3		0
1-4	21.0	3.8	49.3	29.3	3.8
5-8	9.7	5.0	59.0	42.8	8.8
9-12	6.8	5.8	<u>65.8</u>	<u>52.3</u>	<u>14.6</u>
13-16	5.4	6.5	71.2	59.8	21.1
17-20	4.0	6.2	75.2	65.4	27.3
21-24	3.7	6.9	78.9	70.6	34.2
25-28	3.6	7.9	<u>82.5</u>	<u>75.6</u>	<u>42.1</u>
29-32	2.7	7.0	85.2	79.4	49.1
33-36	2.1	6.2	87.4	82.4	55.3
37-40	1.1	5.6	89.1	84.8	60.9
41-44	1.6	5.6	90.7	87.0	66.5
45-48	1.2	4.5	91.8	88.6	71.0
49-52	1.1	4.7	92.9	90.1	75.8
53-56	0.8	3.5	93.7	91.2	79.3
57-60	0.7	3.4	94.4	92.2	82.7
61-63	0.6	3.2	95.0	93.0	85.9
64-66	0.5	3.0	95.5	93.7	88.9
67-70	0.5	3.2	96.0	94.4	92.0
77-74	0.4	2.6	96.4	95.0	94.6
75-78	0.3	2.1	96.7	95.4	96.7
79+	0.3	3.3	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>
	<u>100.0</u>	<u>100.0</u>			

than 28 weeks. These spells in total represent 42.1 percent of total unemployment.

Looked at from the perspective of the long durations of unemployment (> 28 weeks) we find that these represent 17.5 percent of the job separations but were responsible for 58 percent of the total unemployed time of all those who became unemployed in Canada. If the zero unemployment spells are eliminated then 25 percent of the spells of unemployment lasted 28 weeks and were responsible for 58 percent of total unemployed time.

These results are quite close to those estimated by Clark and Summers (1979, 37) when they find that in the U.S. in 1974 over 65 percent of non-employment is associated with duration of unemployment in excess of 26 weeks in length. From this observation they came to the conclusion that a program such as a wage subsidy would be justified to provide an incentive to employ these people who had experienced a long duration of unemployment (Clark and Summers, 1980). Their reasoning is that if a wage subsidy would shorten the duration of unemployment of a relatively small number of people who have very long duration of unemployment, then such a policy would have a very significant impact on the total amount of unemployed time experienced in the economy.

This conclusion follows from their implicit assumption that the long durations of unemployment are experienced repeatedly by the same individuals through time. If the opposite assumption were

made that everyone who becomes unemployed has an equal probability of having a long spell of unemployment then a wage subsidy program would be very wasteful. Subsidizing the employers of those who have already had a long duration of unemployment would have little impact on future unemployment as the workers affected would have a very small probability of having another spell of unemployment with a long duration.

Using the UIC-ROE data files we are able to evaluate which of the two hypotheses is closer to the truth for Canada during the 1970s. This analysis is carried out in three ways. First, the distributions of unemployed individuals, spells and unemployed time is constructed according to the duration of time an individual has on average observed going from one job to the next for the sample of workers in the labor force for at least 6 years. Second, we sort out all the long spells of unemployment from 1974 to 1979, and then measure the duration of time these same individuals spent going from one job to another the next time they were separated from a job. Third, we examine the distribution of long spells of unemployment according to the average duration of unemployment of individuals.

Table 4, column 1 contains the 4 week classifications of the average duration of unemployment spells of at least one week in length of individuals in the labor force for 6 or more years. Columns 2 and 3 give the relative and cumulative distribution of the percentage of unemployed individuals who fall within each of

Table 4

Distributions of Unemployed Individuals, Spells and Unemployed Time According to Average Duration of Unemployment Experienced by Individuals in the Labor Force 16 or More Years.

Average Duration of Time Unemployed Between Jobs For Individuals (weeks)	Percentage of Total Number Experiencing Some Unemployment			Percentage of All Spells			Percentage of All Unemployed Time		
	(2) Relative	(3) Cumulative	(4) Relative	(5) Cumulative	(6) Relative	(7) Cumulative			
1-4	8.4	8.4	8.5	8.5	8.5	8.5	0.4	0.4	0.4
5-8	12.3	20.7	16.2	24.7	24.7	24.7	5.3	5.3	5.7
9-12	12.4	33.1	16.5	41.2	41.2	41.2	9.0	9.0	14.7
13-16	11.0	44.1	13.4	54.6	54.6	54.6	10.2	10.2	24.9
17-20	10.5	54.6	11.5	60.1	60.1	60.1	11.3	11.3	36.2
21-24	8.3	62.9	8.4	74.5	74.5	74.5	10.2	10.2	46.4
25-28	7.2	70.1	6.3	80.8	80.8	80.8	8.9	8.9	55.3
29-32	5.4	75.5	4.4	85.2	85.2	85.2	7.2	7.2	62.5
33-36	4.3	79.8	3.1	88.3	88.3	88.3	5.8	5.8	68.3
37-40	3.2	83.0	2.1	90.4	90.4	90.4	4.3	4.3	72.6
41-44	2.9	85.9	1.8	92.2	92.2	92.2	4.2	4.2	76.8
45-48	2.8	88.7	1.7	93.9	93.9	93.9	4.4	4.4	41.2
49-52	2.4	91.1	1.5	95.4	95.4	95.4	4.0	4.0	85.2
53-56	2.5	93.6	1.4	96.8	96.8	96.8	4.0	4.0	89.2
57-60	1.7	95.3	.8	97.6	97.6	97.6	2.7	2.7	91.9
61-63	1.1	96.4	.6	98.2	98.2	98.2	2.2	2.2	94.1
64-66	1.1	97.5	.5	98.7	98.7	98.7	1.8	1.8	95.9
67-70	.9	98.4	.4	99.1	99.1	99.1	1.6	1.6	97.5
71-74	.4	99.3	.2	99.5	99.5	99.5	1.5	1.5	99.9
75-78	.4	99.7	.2	99.7	99.7	99.7	.9	.9	99.9

the average duration categories.⁷ Of the individuals experiencing unemployment in Canada approximately 70 percent have averaged less than 28 weeks per spell of unemployment. These same individuals have accounted for 80.8 percent of the total number of job separations experienced by the unemployed (column 5) and 55.3 percent of the unemployed time.

Expressed in another way, instead of having 24.4 percent of the total number of unemployment spells lasting more than 28 weeks and representing 58 percent of the total unemployed time (Table 3, column 5 and 6) we find that 29.9 of the individuals have spent more than 28 weeks on average between jobs and represent 45.5 percent of the total unemployed time. While the spells over 28 weeks in duration on average represent 2.4 times as much unemployed time per spell, the individuals who have averaged more than 28 weeks per spell have experienced 1.5 times as much unemployment as those who have averaged less than 28 weeks of unemployment between jobs.

The second approach to analyzing the consistency in the behavior of people who experience a long duration of unemployment is to first identify all the spells that are longer than 26 weeks and the individuals who experienced them. The individuals were then selected who had experienced at least one subsequent completed spell of unemployment followed by reemployment and a subsequent spell of unemployment. The average duration of the long spells was calculated to be 42.4 weeks with standard duration of 13.0 weeks. However, the average duration of the following spell of

unemployment was only 16.6 weeks and had a standard deviation of 18.3 weeks. This is to be compared with an average duration of unemployment following all job separations in the sample of 12.0 weeks or an average duration of unemployment for spells of at least one week long of 17.6 weeks. These results indicate that after a person has experienced one long spell of unemployment their immediately subsequent unemployment behavior is much closer to the average of everyone else in the sample than to the long duration he experienced previously.

Another way of analysing the distribution of long spells of unemployment is to estimate what proportion of the spells greater than 28 weeks are experienced by individuals whose average duration of unemployment is greater or less than 28 weeks. We find that 45 percent of all long spells are experienced by the 29.9 percent of the individuals in the sample who have durations longer than 28 weeks (Table 4, column 3), while the remaining 70 percent of the individuals experienced 55 percent of the long spells. On an individual basis, those with average duration of unemployment greater than 28 weeks have experienced an average 1.24 spells of greater than 28 weeks from 1974 to 1979 while those with an average duration of less than 28 weeks have on average experienced .64 of this type of spell.

The wide distribution of the long duration of unemployment across individuals can be seen from an examination of Figure 1. The curve labeled TT shows the percentage frequency distribution of all

the unemployment spells of at least one week experienced by the sample of workers in the labor force for 6 or more years during 1974-79. The curve SS indicates the percentage frequency distribution of all spells of unemployment of greater than one week experienced by individuals whose durations of unemployment have averaged 4 to 8 weeks while the curve LL shows distribution of unemployment spells for individuals who have averaged between 28 and 32 weeks of unemployment per spell.

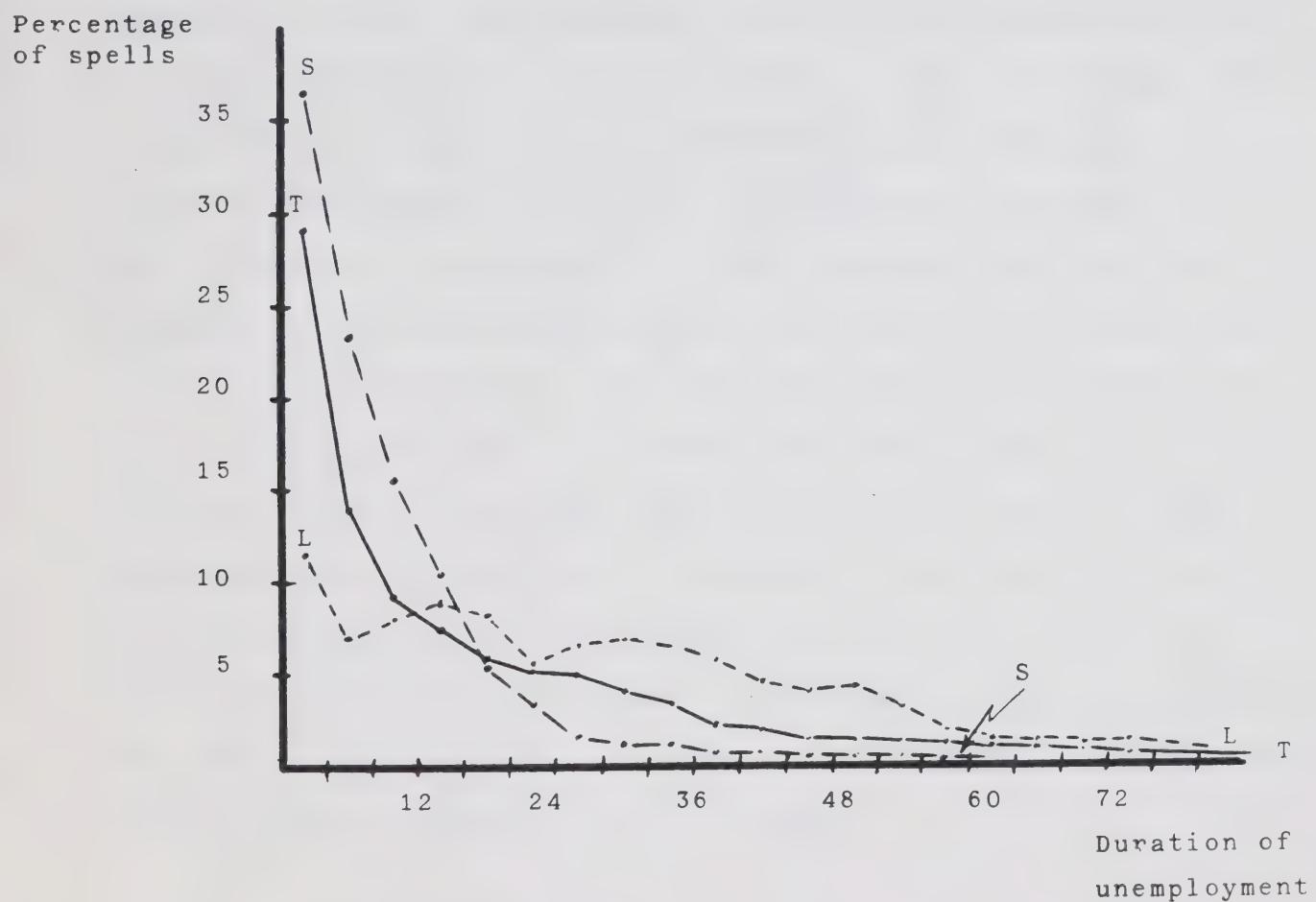


Figure 1

From these three distributions we find that they all are not normal distributions but consist of a larger number of short durations contained with a long right hand tail of extended spells of unemployment. The distribution of the people with short average durations (SS) contains more spells of short duration than distribution (LL) but fewer longer spells of unemployment.

From the various ways we have tried to estimate the distribution and degree of repetitiveness of long duration and unemployment spells across individuals it is clear that both unemployed time and the frequency of spells of long duration are not evenly allocated across individuals. On the other hand, they are more evenly spread than is indicated by an examination of the amount of unemployment associated with different durations of single spells of unemployment. A wage subsidy scheme that was triggered by an individual having a long duration of unemployment would tend to grow through time until a large proportion of the labor force who had ever experienced any unemployment would become eligible. This follows from the fact that most people becoming unemployed have a significant probability of having such a spell. Hence, programs to alleviate unemployment that are tied to the observed length of the duration of unemployment are likely to be both costly and not highly effective in reducing the overall amount of unemployment experienced by an economy.

III. The Duration of Employment and the Frequency of Unemployment

In addition to the duration of unemployment spells the durations of people's employment spells is a key variable determining both the proportion of labor force time people are unemployed and their frequency of becoming unemployed through time. Table 5 contains the distribution of durations of completed spells of employment by age and sex of individuals experiencing some unemployment during 1974-79.

Table 5

Average Duration of Completed Employment Spells of Those
Experiencing Some Unemployment 1974-79

Age	Men	Women
Group	(weeks from beginning to end of job)	
24	30.6	41.2
25 to 34	38.4	49.1
35 to 44	37.2	43.7
45 to 54	33.7	43.0
55 and above	33.5	50.5

For all age groups, the mean of the duration of employment by sex are significantly different from each other at a 99 percent degree of confidence. For sample sizes see table 7.

Over the entire 1974-79 period approximately 50 percent of the Canadian labor force did not experience any unemployment. Of those who did, women on average enjoyed longer durations of employment in every age group than did men. Hence, the observation that women experience longer durations of unemployment (or labor force periods between jobs) does not mean that the labor market experiences of women who become periodically unemployed is worse than that of men who also have become unemployed. When we sum up all the weeks the individuals in each of the categories were employed and divide it by the total number of weeks these individuals were in the labour force we find that all categories of women workers are employed approximately the same proportion of their labor force time as men. This can be seen from the examination of Table 6.

Table 6

Proportions of Time Employed By Age and Sex

<u>Age Group</u>	<u>Men</u>	<u>Women</u>
24	.637 (.224)	.628 (.238)
25-34	.709 (.197)	.701 (.219)
35-44	.747 (.202)	.710 (.220)
45 to 54	.713 (.219)	.684 (.226)
55 and above	.671 (.253)	.684 (.249)

Standard errors in brackets. Sample sizes reported in Table 7. None of the above proportions of time employed for men and women are significantly different from each other when comparing people in the same age group. However, people less than 25 years of age and men over 55 who have experienced unemployment work significantly less than those of their same sex of between 25 and 54 years of age.

The impact of the longer durations of employment enjoyed by women is also reflected in the frequency that women become unemployed. In Table 7 the estimate of the number of times workers experience an unemployment spell of greater than one week per year are presented by the age and sex of the worker for those workers who have ever been unemployed between 1974 and 1979.⁸

For all age categories women have a lower frequency of unemployment than men when unemployment is measured as labor force time from job to job greater than one week. This results is the opposite of what is usually observed from monthly labor force survey data. The reason for this difference is that a large proportion of the time usually classified as being "out of the labor force" is included here in time not employed. However, from these results it is quite clear that women, because of their significantly longer durations of employment, tend to spend approximately the same proportion of labor force time employed as do men but experience fewer unemployment spells that are associated with a separation from a job.⁹

Table 7

Frequency of Unemployment Spells of One Week or More Duration by Age and Sex

Age Group		Men	Women
24	Frequency	.844	.647*
	Standard Deviation	(.534)	(.427)
	Sample Size	829	617
25 to 34		.788	.561*
		(.575)	(.406)
		960	779
35 to 44		.785	.665*
		(.631)	(.560)
		407	332
45 to 54		.849	.716*
		(.767)	(.655)
		295	254
55 and above		.664	.618
		(.598)	(.649)
		364	169

* Significantly different between sexes at 95% degree of confidence.

IV. Interaction Between Durations of Employment and Unemployment.

Thus far, we have treated the durations of unemployment and employment as independent events through time. Although it appears that long durations of unemployment are not systematically replicated by individuals it is of interest to see if there is any relationship

between a person's durations of employment and unemployment through time.

In order to evaluate those relationships we have examined the durations of unemployment and employment for those who over 1974-79 have had at least two completed unemployment and employment spells. Denoting E_1 as the duration of the first employment spell, E_2 as the duration of the second employment spell, U_1 as the duration of the unemployment spell following E_1 , and U_2 as the duration of unemployment following E_2 , we have estimated the Pierson correlation coefficients between these variables as presented in Table 8.

Table 8

Relationship Between the Durations of Employment and Unemployment for Individuals

	$\rho_{E_1 U_1}$	$\rho_{U_1 E_2}$	$\rho_{E_1 E_2}$	$\rho_{E_2 U_2}$	$\rho_{U_1 U_2}$
Coefficient	.010	-.0635	.344	-0.042	.131
Degree of Confidence of Significantly Different From Zero	(85)	(99)	(99)	(99)	(99)

Of all the pairs of correlations by far the strongest relationship is the positive one between two consecutive durations of employment. Those people who have long or short durations of employment tend to repeat this behavior. There tends to be no consistent behavior between the duration of employment spells and the following duration of unemployment. The correlation between E_1 and U_1 is a positive .010 while the correlation between E_2 and U_2 is a negative -.042. Both of these values are very small with the former not significantly different from zero at a 96 percent degree of confidence. The relationship between a duration of unemployment and the following duration of employment is a small negative value (-.06). This runs counter to the search theory of unemployment where a longer unemployment (search) period should result in a better (longer) subsequent employment experience.

For consecutive unemployment spells there is only a relatively small positive correlation (.13) between the duration of these spells. Hence, we find that individuals unemployed in Canada at some time from 1974 to the end of 1979 displayed more consistent behavior over this time with respect to their duration of employment than their duration of unemployment.

This result could be consistent with a number of hypotheses. First, it may be the case that the sectors which tend to repeatedly lay off workers are more systematic in the length of job they offer than in the length of time they leave their workers unemployed. A second hypothesis might be that people have more control over the

number of weeks they work than they do over the duration of their unemployment spells. Workers can either choose jobs of known durations or quit. These two hypotheses could be tested through a study of the separation reasons provided by the UIC-ROE data file and by examining the hiring patterns of firms.

V. Summary and Conclusions

Using data developed from the Unemployment Insurance Commission's administrative records we have been able to research a number of questions concerning the nature of the duration of unemployment and employment in Canada. Our results indicate that the time it takes for females to obtain a new job after separation from a previous one is significantly longer than it is for the case of males. On the other hand, females retain jobs significantly longer than do men. As a result, females end up being employed about the same proportion of their labour force time as men, but have a significantly lower rate of job turnover.

Contrary to belief, we find that people with long durations of unemployment do not tend to repeat this behaviour in consecutive spells. In addition, we find that unemployed time is not as unevenly distributed across individuals who experience unemployment as a single examination of the distribution of the duration of unemployment would indicate. Further, we find that the duration of consecutive employment spells for an individual are much more highly correlated than are consecutive durations of unemployment.

Although there is substantial evidence from other studies (Robb 1978, Gunderson 1979) that wage discrimination by sex exists in the Canadian labor market, the results of this paper would indicate that concern over sex discrimination in the unemployment experience of women is probably not warranted. While the unemployment-employment experience of men and women in terms of the pattern of their employment and unemployment over time is different, there is little or no grounds to argue that the experience of women is worse than that of men. In addition, this study would suggest that targeting special unemployment (or employment promotion) assistance to those who have experienced a long duration of unemployment is not likely to be effective in significantly reducing unemployment. The long durations of employment do not appear to be as highly concentrated within a small group of individuals as is generally believed.

Footnotes

1. These studies include Holt (1970), Hall (1970), Perry (1972) Feldstein (1973a, 1973b, 1975), Denton et al (1976), Lazar (1977), McIlveen and Sims (1978) and Posner (1980).
2. For Canada the primary data source for such studies is Statistics Canada, The Labour Force, Catalogue 71-001, Ottawa (Monthly). The procedures of this survey is provided by Statistics Canada (1977) Methodology of the Canadian Labour Force Survey, 1976, Catalogue 71-526, Occasional Ottawa.
3. The income tax (T-4) information and unemployment insurance benefit records extent from 1972 through to the present. However, the record of employment information only became universal in 1974. Our sample of individuals were chosen from those who made a claim at least once from 1972 to 1979, however, detailed information is reported for these individuals experiencing job separations from 1974 through 1979 while more summary information is generated for their 1972-73 employment-unemployment experience.
4. For an excellent discussion of the criteria used to determine a person's labour force status, see Beach and Kaliski (1981).
5. Although our information reports on individuals leaving a job one week and starting another one the next week, it is possible that a person could experience a week of unemployment.

6. Because spells that resulted in people becoming unavailable for work were excluded from the measurement of duration of unemployment, the category "other" does not include, quit to go back to school, retiring, sickness, injury or pregnancy.
7. In this estimation the average duration of unemployment is first calculated for each individual. The information on the distribution of the spells of unemployment he experiences is retained to allow us to estimate the distribution of spells experienced by people with a given average duration of unemployment.
8. The frequency of unemployment spells is calculated as ((number of unemployment spells of at least one week while in the labor force during 1972-79)/(total weeks in the labor force during 1972-79)) x 52.
9. The results for the age group over 55 indicates that the frequency of unemployment of women is less than that of men but is not significantly different from the frequency of unemployment experienced by women.

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